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TECHNICAL NOTE

U.S. DEPARTMENT OF THE INTERIOR – BUREAU OF LAND MANAGEMENT

TIRE CARE

Tires - If you ride on rubber, this word is for you. Its offered mainly for men who work with off-highway vehicles and construction equipment. The information applies generally to all rubber tired vehicles.

Where Trouble Begins - Tire trouble generally begins with adverse factors of heat, weight, inflation or terrain, or some combination of these factors. All simple things, easily understood and easily controlled, yet millions of dollars are wasted because many of us just don't take the trouble to check them out. Tires for a 50-ton hauler run about $4.00 an hour, figured at an average owning and operating costs on a normal job. Carelessness and neglect can boost that to twice the average. Used in that light, it is easy to understand why tire care is so important.

Regardless of how much we pay for our tires or how well we care for them, some day they are going to wear out. A quality tire, treated and maintained properly will give us thousands of extra miles, saving us money, tires, service and downtime. Here are some reminders that keep the rubber on our equipment vehicles and equipment going longer:

Correct Tire Pressure - Correct tire pressure must be maintained for maximum tire life. Improper inflation is a major cause of tire wear and premature failure. Once a vehicle is in the field, it is difficult to tell whether or not the tires are properly inflated, so always check the pressure prior to starting a day's operation.

Underinflation - The most common problem, in fact, underinflation causes 94 percent of all tire losses. With this kind of statistics, it doesn't make much sense to kick a tire and assume the operating pressure is O.K. An underinflated tire suffers from excessive heat creating by flexing, breaking down the rubber strength, and separating the cords, and because the equipment doesn't roll freely, fuel consumption rises sharply.

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Overinflation - Another major cause of tire wear. This puts too much strain on the cord body, beads separate, and the rubber becomes subject to cuts and snags. Because there is a less overall contact with the road, tread wear is more rapid and traction is reduced. Another result of overinflation is a hard ride, transmitting jolts to the entire piece of equipment.

BLOW-OUT DUE TO OVERINFLATION.

If a tire is properly inflated when cool, don't bleed it to relieve additional pressure built up during the day's run. A certain amount of pressure build-up is normal.

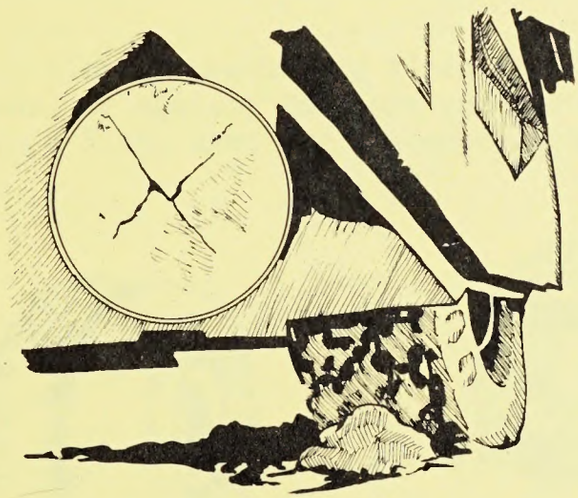
Do not bleed tires during operation.

Overloading - Tires beyond maximum care and capacity is negligence and deliberate abuse. Before increasing equipment load, be sure that tires with adequate load capacity are available (larger size and/or higher ply rating), and replace with tires capable of handling the new loads. Grades, banks, and turns affect load distribution. Tires on the effected wheel positions will have a greater amount of load placed when the vehicle climbs the grade or makes a turn. Such overloading, while not constant, is frequent and likely to cause premature tire failure.

Load Distribution is also Important - If the load is not equally carried by all tires, those that take the extra weight are subject to the same stresses as result from overloading. Good operators of equipment know this, and can be counted on to place the material accordingly. If they don't, remind them. There is a safety factor here too that gives everyone a personal interest in even loading.

Heat is Worst Enemy of Rubber - Off-highway tires because of their heavy construction develop internal heat factors more than other types of tires. Speeds over 30 miles per hour may increase internal tire temperatures to the critical point; therefore, speed and length of haul are very important factors in tire life. It is impossible to shorten the length of haul, but it is possible to reduce speed and load. It is a false operating economy not to reduce speed, load, or both when properly inflated tires start to fail from excessive heat.

Maintenance of the Haul Road - This factor is important as well as loading and dumping areas. Conscientious maintenance prevents development of excessive road crowns, and insures prompt repairs of ruts or chuck holes and removal of rock spillage or sharp objects embedded in the rock surface.



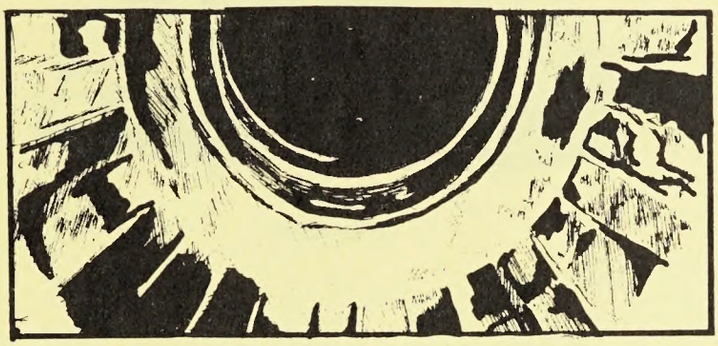
Driving over obstacles.

Proper drainage of the haul road will prevent water from accumulating and hiding any tire damaging road hazards. This maintenance is vital to off-highway tires and will pay for itself through longer tire life and lower tire expense.

Front End Alignment is Important and is Something the Operator can Easily Check - A rough ride, front end shimmy, worn edges or spotty tire wear are positive indications of a problem condition. If such a condition exists, get it fixed without delay. Letting it go makes it worse.

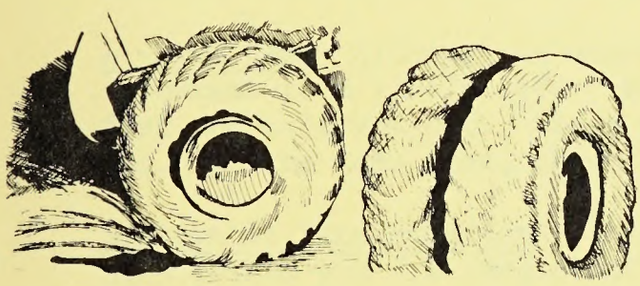
Oil, Grease and Gasoline are Quickly Absorbed by Rubber, Swells Up, then becomes Soft and Spongy - The damage is permanent and fatal. Never clean tires with gasoline or other petroleum products, or allow tires to stand in puddles of petroleum products often found near the shop. If a petroleum product does get on a tire, promptly flush off or wipe with water.

Bad Driver Practices can Raise Tire Costs Fast - Operators should not attempt to pull too great a load or start too abruptly. This may cause the drive wheels to spin resulting in rapid tread wear. Excessive breaking should be avoided, otherwise the heat developed may be transferred to the beads, causing these areas to become charred or cracked.

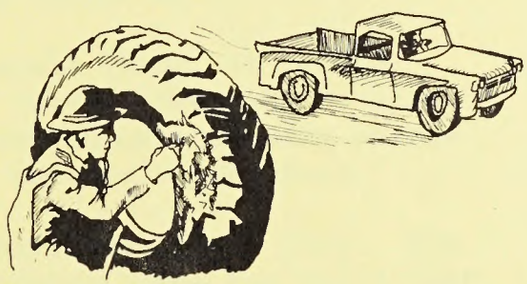


RADIAL CRACKS

Operators can help also by preventing tires from rubbing against side banks on haul roads, or against barriers erected to facilitate unloading. Never run on a flat, even for a short distance.



Effects of spinning the drive wheels.

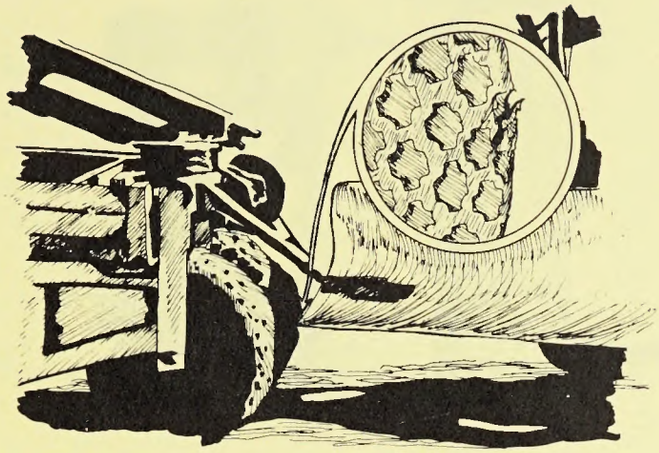


Effects of excessive speed.

Rocks and Stones - Proper maintenance requires stones or other objects which have become wedged between dual tires, or between the tire and equipment to be removed promptly to prevent serious tire damage. A rock ejector should be installed on the equipment.

Remove objects wedged between duals.

Cuts - Even with the best of maintenance practices, cuts will still be a source of tire trouble. The correct procedure for handling and repairing tires should be given careful attention. Close inspection of all tires should be made at time of inflation checks, and all tires having cuts that penetrate into the cord body should be removed for proper repair.



Nicking the tire.

Failure to make regular inspections and repairs when needed will result in irrepairable damage to the cord body. Small rocks and dirt will get into shallow cuts in the tread and if neglected will gradually be pounded through the cord body.

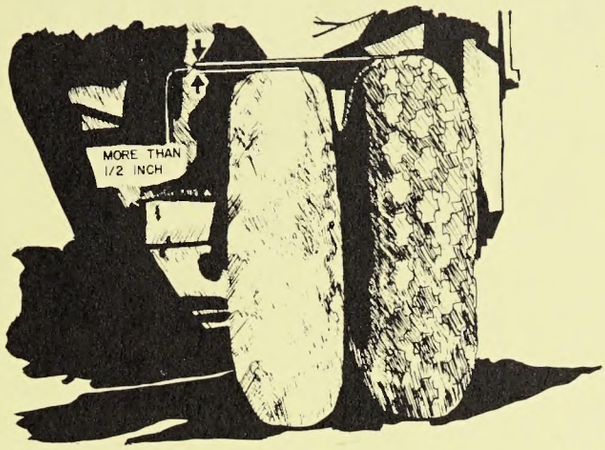
One simple method of forestalling this action is to clean out the cut with an awl or similar tool to remove any stones or other matter that may be lodged in the cut. The rubber around the hole should then be trimmed so other stones cannot be wedged in.

A Valve Cap - Although it sounds like a small thing, it can be important to a tire's life. Be sure all valves have caps to keep dirt and moisture out. Clean the valve end before screwing on the cap. At the same time, check for cut or twisted valve stems.

Systematic Tire Rotation - This is mandatory for longer life. The tire system you use should not vary, otherwise tires may still wear unevenly. This also applies to the length of the tire between rotation. A standard system will allow longer original tread and retread life.

Proper Tire Selection is Essential - Hauling conditions dictate the size, ply rating, tread, and inflation. Manufacturers offer several types to match a variety of conditions. If conditions change, change your tires, and don't overlook the savings interchangeability can give you--you may be able to mount the same tires on other types of equipment.

Use the Correct Tires and Rims - Correct tire sizes are particularly important with dual assemblies. If there is one larger tire in a set of duals, it must bear the lion's share of the load, wearing down until both tires can make equal contact with the road. This strain naturally causes extra strain on the larger tire, flexing and heating to the point of a possible tire fire. Check with the tire square to make sure your duals are properly matched.



Difference in diameter for duels.

Remember the punishment truck tires receive. Every bump, hole and jolt contributes to shortening the service life of a tire. High speeds, hard stops, sharp shoulders, rocks, improper inflation, curves, and overloading all hurt your tires.